REMARKS

1. The Examiner's entry of the amendment filed 9/1/04 is acknowledged.

2. The Examiner's restriction for examination purposes and withdrawal of previously submitted claims 29-41 is acknowledged, with traverse.

Applicant requests further examination of claims 29-37. Claim 29 is currently amended, incorporating the "metal" limitation from claim 17. Claim 30 is cancelled without prejudice or disclaimer of the subject matter. Thus, claims 29-37 are no longer directed to a distinct laminate classified in a different subclass than the originally elected rubber-to-metal bonded article of claims 17-28. This amendment was suggested by the Examiner in the phone interview.

As for claims 38-41, directed to a torsional vibration damper ("TVD"), Applicant respectfully submits that the TVD is a species of the generic rubber-to-metal bonded article of claim 17, as discussed in the specification at e.g. page 8 lines 3-7. The rubber-to-metal bonded article of claim 17 is itself a final product, not an intermediate, albeit a very generic one. The TVD is very closely related in design to the article of claims 17-28, and especially claim 25. Thus, Applicant requests further examination of claims 38-41.

3. Applicant acknowledges the Examiner's final rejection of claims 17-24 and 26-28 under 35 USC 102(b). Applicant submits the currently amended claim 17 with additional clarifying limitation language with antecedent basis in the specification, "*said rubber member is ~~formed~~ pre-formed and at least partially pre-vulcanized and arranged to reside between said metal members in at least one of a neutral state and a state of compression at a temperature in the range of from about -20°C to about 120°C;*". This amendment is submitted per 37 CFR §1.116(b) to avoid the rejections set forth in the last Office action, incorporate the suggestions made by the Examiner in the phone interview, and place the case in condition for allowance, or to simplify the issues for appeal.

Applicant submits that this clarifying limitation distinguishes the instant invention from the unvulcanized "pre-formed film" used in the vulcanization bonded articles disclosed by Drake et al, Nagel, and Ravagnani et al. The final product is distinct with

respect to the structural differences implied by the process-related terms used and also with respect to the explicitly claimed structure of the resulting product.

4. Explicit Structural Difference. The product of the instant invention has the claimed distinguishing feature of "*a rubber member ... resid[ing] between said metal members in at least one of a neutral state and a state of compression at a temperature in the range of from about -20°C to about 120°C;*". As explained in the specification at p. 2 lines 12-19, the prior art vulcanization-bonded products would necessarily and inherently have a rubber member residing in tension between two metal members at any temperature below the vulcanization temperature. Applicant's invention results in a bonded product having a rubber member residing between two metal members in at least one of a neutral state and a state of compression at a temperature in the range of from about -20°C to about 120°C, which is well below known vulcanization temperatures. This is the main structural difference between the prior art bonded articles and the instant invention: tension versus compression in the rubber member. This structural feature is explicitly included in claim 17. "*To reside*" is to exist – thus introducing a description of the state or structure of the rubber member, not a process. To reside in a state of compression, is a structural feature of the final product, not a process limitation.

The following quote from a classic textbook, regarding conventional vulcanization bonded torsion springs, which have an annular elastomeric or rubber body between two cylindrical metal members, describes the origin and importance of inherent tensile stresses in the prior art rubber.

> "*Shrinkage.* The volume of most elastomers changes *approximately* 0.047% per °C, or a total of about 6% from curing temperature to room temperature; however, other partially compensating volume change effects exist, and it is common practice to allow for about 5% shrink after cure. Where an elastomer is bonded over a considerable area to a metal which cannot move, and where the exposed elastomer area is relatively small, even this small amount of shrinkage may cause a damaged bond, voids or unrelieved tensile stresses in parts of the body.
>
> Some differences of opinion exist among authorities on the effect of tensile stresses produced during cooling, but in general it can be stated that uncorrected cooling tension is harmful and can result in a 20-50% reduction in the fatigue life for a torsion cycle (as compared with that of the same spring where the body is under compression)." P. K. Freakley, A. R. Payne, "Theory and Practice of Engineering with Rubber," ISBN 0853347727, Elsevier Science, (September 1978) at p 242.

These unrelieved tensile stresses are inherent in the prior art rubber-to-metal articles of the references cited by the Examiner. Therefore Applicant submits that residing *"in at least one of a neutral state and of a state of compression..."* is a structural feature of the final product that provides inherent structural benefits and that distinguishes the instant invention from the prior art.

5. Implied structural differences. Other structural differences are implied when it is said that the *"rubber member is pre-formed and at least partially pre-vulcanized and arranged..."* Though the rubber member of the instant invention and that of the vulcanization bonded prior art will both ultimately be formed and vulcanized, the pre-formed and pre-vulcanized rubber member will bear distinct signs of having been press-fit or arranged in compression between the two metal members, as opposed to the prior art, which will bear distinct physical signs of having been directly molded between its metal members. These signs include flash, mold markings, and evidence of rubber shrinkage and flow in the directly molded prior art; and lack of flash, no evidence of flow or shrinkage, different types of mold markings if any, and evidence of bulging from being pressed between the metal members in an article of the instant invention. Moreover, if the article of the instant invention is disassembled, the pre-formed pre-vulcanized rubber member will be seen to spring back toward its pre-formed shape, while the prior art vulcanization bonded rubber will simply retract to relieve the tension. These structural differences from the prior art are inherent or implied results of the rubber being pre-formed, pre-vulcanized, and then arranged.

Applicant refers now to a portion of section 2113 of the MPEP.

> "The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)" MPEP §2113.

The full quote from *Garnero*, is illuminating.

> "The trouble with the solicitor's approach is that it necessarily assumes that claim 1 should be construed as a product claim containing a process, *rather than structural, limitation*. However, it seem to us that the recitation of the particles as 'interbonded one to another by interfusion between the surfaces of the perlite particles' is as capable of being construed as a structural limitation as 'intermixed,' 'ground in place,' 'press fitted,' 'etched,' and 'welded,' all of which at one time or another have been separately held capable of construction as structural, *rather than process, limitations*." *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (emphasis added).

Applicant submits that *"pre-formed and at least partially pre-vulcanized and arranged"* is language that seems to relate to process steps, but in this context, the language is also capable of structural construction, *rather than process*, and in addition, it is expected to impart distinctive structural characteristics to the final product. Vulcanized rubber is structurally different than unvulcanized rubber. Formed or pre-formed rubber has a structural shape that becomes locked in upon at least partial pre-vulcanization. Rubber arranged after pre-vulcanization can exist in a different stress state than rubber arranged before vulcanization. The common usage of these terms to describe rubber and the implied features described above all support a structural limitation *rather than a process limitation*. Thus, *"pre-formed and ... pre-vulcanized"* and *"pre-formed and at least partially pre-vulcanized and arranged"* are structural limitations in claim 17. In fact, claim 17 essentially describes a "press fitted" rubber member, as actually recited in claim 28, which is distinct from a prior art vulcanization bonded rubber member. The term "press fitted" itself is capable of construction as a structural limitation *rather than a process limitation*, as quoted above. Thus, Applicant submits that because of a reasonable structural construction of the terms, claim 17 should not be construed as hampered with product-by-process limitations.

Even if the Examiner disagrees, MPEP §2113 nevertheless requires consideration of the structure implied by the limitations that are arguably "process steps." Applicant believes that the structural implications discussed above justify the terminology used. Moreover, a beneficial and distinguishing structural feature is also explicitly recited in claim 17 as discussed in section 4 above.

6. Applicant acknowledges the Examiner's final rejection of claim 25 under 35 USC 103(a) over Drake et al. Applicant submits that the currently amended claim 17, and therefore dependent claim 25, is now patentably distinct. Claim 17 recites a

rubber member that is *"pre-formed and at least partially pre-vulcanized and arranged to reside between said metal members in at least one of a neutral state and a state of compression at a temperature in the range of from about -20°C to about 120°C."* Drake does not teach use of a pre-vulcanized or partially pre-vulcanized rubber member to bond metal substrates, and Drake does not teach a rubber member that is not in a state of tension, nor is there any suggestion of these features. Drake's vulcanization bonded articles inherently comprise a rubber member with unrelieved tensile stresses as described above.

7. If claim 17 is now allowable, claims 18-28 should be allowable as dependent on claim 17, and further examination of claims 29-37 and 38-41 is respectfully requested.

FEE STATEMENT

Any fees which may be required as a result of the amendments made herein are authorized to be charged to Assignee's deposit account number 07-0475.

Respectfully submitted,

Curtis H. Castleman, Jr.
Attorney for Applicants
Reg. No. 25,495
Telephone: (303) 744-4685

Dated: 16 Feb 2006

pd